

2. Please replace the paragraph bridging the pages 27-28 as follows:

B¹

The UHMWPE of this embodiment has no trapped free radicals, e.g., unsaturated traps-vinylene free radicals. It is preferred that the UHMWPE of this embodiment have a hardness less than about 65 on the Shore D scale, more preferably a hardness less than about 55 on the Shore D scale, most preferably a hardness less than about 50 on the Shore D scale. By hardness is meant the instantaneous indentation hardness measured on the Shore D scale using a durometer described in ASTM D2240. It is preferred that the UHMWPE of this embodiment be substantially not oxidized. The polymeric structure has extensive cross-linking such that a substantial portion of the polymeric structure does not dissolve in DECALIN (decahydronaphthalene). By substantial portion is meant at least 50% of the polymer sample's dry weight. By not dissolve in DECALIN (decahydronaphthalene) is meant does not dissolve in DECALIN (decahydronaphthalene) at 150°C over a period of 24 hours. Preferably, the UHMWPE of this embodiment has a high density of entanglement so as to cause the formation of imperfect crystals and reduce crystallinity. By the density of entanglement is meant the number of points of entanglement of polymer chains in a unit volume; a higher density of entanglement being indicated by the polymer sample's inability to crystallize to the same extent as conventional UHMWPE, thus leading to a lesser degree of crystallinity.

In the Claims:

Sub D1 ✓
Please amend claims 124, 128, 142, 147 and 149 as follows:

B²
124. (once amended) A medical prosthesis for use within a body, said prosthesis being formed of radiation treated ultra high molecular weight polyethylene having cross-links and multiple melting peaks.

B3
128. (once amended) The medical prosthesis of claim 124, wherein said polymeric structure has extensive crosslinking so that a substantial portion of said polymeric structure does not dissolve in xylene at 130°C or DECALIN at 150°C over a period of 24 hours.

Sub
C4
B4
142. (once amended) A method for making a cross-linked ultra high molecular weight polyethylene having substantially no detectable free radicals, comprising the steps of: providing ultra high molecular weight polyethylene having polymeric chains, wherein the ultra high molecular weight polyethylene is at a temperature below its melting point; irradiating said ultra high molecular weight polyethylene with more than 5 Mrads of radiation so as to cross-link said polymeric chains, wherein the radiation heats the ultra high molecular weight polyethylene; and cooling said heated ultra high molecular weight polyethylene.

Sub
C5
B5
147. (once amended) A method for making a cross-linked polyethylene, comprising the steps of: providing polyethylene at a temperature that is below its melting point; irradiating the polyethylene so as to (1) cross-link polymeric chains in the polyethylene and (2) to generate sufficient heat to at least partially melt the polyethylene; and cooling the heated polyethylene.

B6
149. (once amended) The method according to claim 147, wherein the partially melted polyethylene is further heated by an additional heating source.